

Appendix A

ACRONYMS AND ABBREVIATIONS

ACS	advanced squeeze casting
AFS	aluminum foam sandwich
ALM	automotive lightweighting materials
ANG	adsorbed natural gas
ANL	Argonne National Laboratory
ARC	Albany Research Center
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
CAE	computer-aided engineering
CMM	coordinate measurement machine
CRADA	cooperative research and development agreements
CSEM	commercially available test rig
CTE	coefficient of thermal expansion
DFMEA	design failure modes effects and analysis
DOE	U.S. Department of Energy
DSC	dynamic scanning calorimetry
EBSD	electron backscatter diffraction
EC	engine conditioned
ECAE	equal channel angular extrusion
EMTA	Eshelby-Mori-Tanka approach
EPC	evaporative pattern casting
FE	finite element
FEA	finite element analysis
FEM	finite element method
FSJ	friction stir joining
FSP	friction stir processing
FSW	friction stir welding
HSWR	high-strength weight reduction
INEEL	Idaho National Engineering and Environmental Laboratory
INS	inelastic neutron scattering
LANL	Los Alamos National Laboratory
LSP	laser shot-peening
LST	laser surface texturing
MA	mechanical alloying
MATA	methane adsorption test apparatus
MDT	Montana Department of Transportation
MEL	Magnesium Elektron
MMC	metal matrix composites
NATT	Northwest Alliance for Transportation Technologies
NCC	National Composites Center
NFC	near-frictionless carbon
NGF	next-generation frame
NIST	National Institute of Standards and Technology
NRCAN	Natural Resources of Canada
NSF	National Science Foundation

NVH	noise, vibration, and harshness
ODS	oxide dispersion strengthened
OEM	original equipment manufacturer
OFCVT	Office of FreedomCAR and Vehicle Technologies
OHVT	Office of Heavy Vehicle Technologies
OM	optical microscopy
ORNL	Oak Ridge National Laboratory
PAN	polyacrylonitrile
PNNL	Pacific Northwest National Laboratory
PPAP	production part approval process
PU	pickup
R&D	research and development
RDF	radial distribution function
RMC	reverse Monte Carlo
RTM	resin transfer mold
SANS	small-angle neutron scattering
SDSMT	South Dakota School of Mines and Technology
SEM	scanning electron microscopy
SMC	sheet molding compound
SSBT	subscale brake tester
SUV	sport utility vehicle
TEM	transmission electron microscopy
ULC	ultra-large thin-wall structural castings
USAMP	U.S. Automotive Materials Partnership
UT	University of Tennessee
UW	ultrasonic welding
VAVE	value analysis/value engineering
YSZ	yttria-stabilized zirconia